

WHAT IS CLAIMED IS:

1. A phase edge phase shift mask enforcing a width of a field gate image, comprising:

a phase shift mask comprises a plurality of shifters and an opaque region  
5 for defining the shifters; and

a trim mask comprises first, second, and third trim patterns overlapped with the phase shift mask, wherein the first trim pattern corresponds to an opaque region between the shifters, the second trim pattern is connected to the first trim pattern and is separated from at least one shifter having a predetermined width,  
10 and the third trim pattern is in contact with selected sides of the first and the second trim patterns.

2. The phase edge phase shift mask of claim 1, wherein the third trim pattern contacts the first and the second trim patterns to prevent the formation of a  
15 notch structure.

3. The phase edge phase shift mask of claim 1, wherein a region separated by a predetermined width between the shifters and the first and the second trim patterns is protected by the third trim pattern.

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4. The phase edge phase shift mask of claim 1, wherein the shifters comprise phase shift regions that are formed to change a phase of incident light.

5. The phase edge phase shift mask of claim 1, wherein a dummy pattern is attached to the second trim pattern along a side opposite to the selected sides of the second trim pattern in contact with the first and third trim patterns.

6. A method of fabricating a phase edge phase shift mask enforcing a width of a field gate image, comprising the steps of:

10 forming a plurality of shifters comprising of phase shift regions;  
forming an opaque region for defining the shifters;  
preparing a phase shift mask comprising of the shifters and the opaque region;  
forming a first trim pattern corresponding to the opaque region between  
15 the shifters;  
forming a second trim pattern separated from the shifters by a predetermined width;  
connecting the first trim pattern with the second trim pattern;

forming a third trim pattern within boundaries of the shifters and in contact with selected sides of the first and the second trim patterns by overlapping within the shifters;

5 preparing a trim mask comprising the first, second, and the third trim patterns; and

preparing the phase edge phase shift mask using the phase shift mask and the trim mask.

7. A phase edge phase shift mask enforcing a field gate image,  
10 comprising:

a phase shift mask comprising a plurality of shifters and an opaque region for defining the shifters; and

a trim mask comprising first, second, and third trim patterns overlapped with the phase shift mask and a dummy pattern, wherein the first trim pattern  
15 corresponds to an opaque region between the shifters, the second trim pattern is connected to the first trim pattern and is adjacent to at least one shifter, the dummy pattern is attached to an opposite side of the second trim pattern side that faces the shifters, and the third trim pattern is in contact with selected sides of the first and the second trim patterns by overlapping within shifters.

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8. The phase edge phase shift mask of claim 7, wherein wherein the third trim pattern contacts the first and the second trim patterns to prevent the formation of a notch structure.

5 9. The phase edge phase shift mask of claim 7, wherein the third trim pattern protects a region separated by a predetermined width between the shifters and the first and the second trim patterns.

10 10. The phase edge phase shift mask of claim 7, wherein the shifters comprise phase shift regions that are formed to change a phase of incident light

11. A method of fabricating a phase edge phase shift mask enforcing a width of a field gate image, comprising the steps of:

forming a plurality of shifters comprising phase shift regions;

15 forming an opaque region for defining the shifters;

preparing a phase shift mask comprising the shifters and the opaque region;

forming a first trim pattern corresponding to the opaque region between the shifters;

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forming a second trim pattern adjacent to the shifters;

forming a dummy pattern on an opposite side of the second trim pattern side adjacent to the shifters;

connecting the first trim pattern with the second trim pattern;

5           forming a third trim pattern in contact with selected sides of the first and the second trim patterns by overlapping the selected sides within the shifters, and wherein the third trim pattern is disposed within an outer boundaries of the shifters;

10           preparing a trim mask comprising the first, second, and the third trim patterns; and

            preparing the phase edge phase shift mask using the phase shift mask and the trim mask.